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ABSTRACT

This document contains four papers presented at a sympoisum on structured and unstructured learning moderated by Catherine Sleezer at the 1996 conference of the Academy of Human Resource Development (AHRD). "Designing Experiential Learning into Organizational Work Life: Proposing a Framework for Theory and Research" (Cheri Maben-Crouch) proposes a framework for experiential learning that is based on the following principles: focus on real-world problems or authentic situations; reflection on experiences; social interaction as part of the learning process; and balance of control between designer and learner. "A Case Study of the Development and Implementation of a Structured On-the-Job (SOJT) Training Program in the Coil Processing Industry" (Janice A. Black; Frank J. Zenner, Jr.; Ernest Ezell) discusses the importance of management support and trainer selection to the success of an SOJT program for assembly operators at a midwestern company. "Structured On-the-Job Training: Pre-design Analysis Activities" (Marcel R. van der Klink) emphasizes the importance of task analysis and identification of learners' prerequisite skills in the training design process. "A Case Study of Informal Learning in the Workplace" (Margaret C. Lohman, Pei-ru Wang; Nicholas H. Woolf) explores and describes the nature of informal learning through an analysis of the work behaviors of four front-line employees. All papers contain references. (MN)

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SYMPOSIUM
[24] STRUCTURED & UNSTRUCTURED LEARNING

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Designing Experiential Learning into Organizational Work Life: Proposing a Framework for Theory and Research
Cheri Maben-Crouch, Buena Vista University

A Case Study of the Development and Implementation of a Structured On-the-Job (SOJT) Training Program in the Coil Processing Industry
Janice A. Black, Bowling Green State University
Frank J. Zenner, Jr., Midway Products
Ernest Ezell, Bowling Green State University

Structured On-the-Job Training: Pre-design Analysis Activities
Marcel R. van der Klink, University of Twente

A Case Study of Informal Learning in the Workplace
Margaret C. Lohman, University of Iowa
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Designing Experiential Learning Into Organizational Work Life: Proposing a Framework for Theory and Research

Cheri Maben-Crouch
Buena Vista University

In this paper the author proposes a framework for experiential learning which will be applied in an organization. The components that are believed to facilitate learning are presented along with the conceptual foundation of the framework derived from other theoretical literature and related empirical studies.

Evidence suggests that structured formal *training*, defined as -- taking place in a classroom, facilitated by trainers, controlled by experts and structured -- plays an important role in learning and performance (Ellerington, Marsick & Dechant, 1992). However, other prominent scholars suggest *learning*, defined as -- taking place wherever problems are encountered, sometimes facilitated, controlled by learners and not as structured -- also contributes to as much or more of the process of learning and performance (Ellerington, Marsick & Dechant, 1992).

Few individuals, groups or organizations today fully recognize or are utilizing learning's potential. Possibly this is due to the fact that there are few frameworks in place to capture *learning* as it was defined above. If frameworks were implemented (creating more of a place and time for learning) perhaps learning would occur with more assurance.

In this paper, the components of a framework that facilitate learning are presented below. They were inspired by Courtney's (no date) speculative theory of experiential learning and design:

1) *the focus on real-world problems or authentic situations;*
2) *reflection on the experience;*
3) *social interaction as part of the learning process; and*
4) *balance of control between the designer and learner.*

For the remainder of this paper I will address:

1) How the above components can be implemented in an organization.
2) Related experiential learning theories and frameworks.
3) The value, significance and validity of the components and their related framework in the context of other experiential learning theories and frameworks.

Implementing the Components of Experiential Learning in An Organizational Setting

The framework begins when employees encounter unique problems or situations that arise at different time frames within the course of their work. It is assumed that it is impossible to teach a group one set of knowledge and skills because it is difficult to know what problems or situations each individual employee might encounter. If the situation is routine, the employee moves along with his or her work, thinking that no learning was necessary (Jarvis, 1987). But if the situation is out of the ordinary, one that the employee is not sure how to handle, s/he perceives a need to to gain competence (Schon, 1983).

The learning framework proposed would ask employees to identify these types of situations. In a course taught at a university I asked the learners to identify communication scenarios that they perceived were not handled appropriately *(e.g., one learner pursuing a career in banking had gone on a job interview. He perceived that he had "bombed" due to his lack of communication skills).*

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Additionally, I had provided the learners with a series of questions within which to assess themselves in order to become aware of the gap between their current performance and what more they needed to gain regarding experience, knowledge or skill.

> *What is your previous experience with communication problems like this one and of what does this inform you?*
> *What other learning possibilities could provide you with new knowledge or skills regarding your communication problems?*
> *What experiences, knowledge or skills do fellow colleagues have?*
> *Who can you learn from because they have more experience, knowledge or skills than you possess?*

Furthermore, within this framework there is no facilitator; only a resource advisor (who may be an HRD practitioner or a manager) engaged in accumulating and arranging physical or human resources for employees (e.g., *books were retrieved on "communication in the interview process").*

In order to keep track of the learning and reflect on it consciously, learners were asked to journal about their experiences with the learning process and what they were gaining by talking with colleagues (e.g. the learner journalled, "*I was going about the interview process all wrong. I had asked the bank president to tell me about the organization, when I should have informed him. . .*").

Finally, learning through social interaction occurs through conversations with those the learners perceive to have more experience, knowledge or skills than they possess (e.g, *the learner initiated an interview with a friend [colleague] who had recently retained a position in the banking industry. He asked his friend to relay tips regarding appropriate communication skills needed in the interview process*).

Within the framework for learning in an organizational setting, the four components that facilitate learning are embodied: 1) real experiences, 2) reflection, 3) social learning as part of the learning process, and 4) balance of control between designer and the learner.

Related Literature

Theoretical Foundation: The foundation for the components and related framework can be located in the epistemological base of constructivism. This learning base dramatically changes our conception of learning because of the way the paradigm suggests learning occurs. Constructivists contend that all knowledge is built from our experience. During the experience, the brain is continually seeking to impose order in some form -- to make generalizations from our experiences (Yager, 1991). Constructivists posit we are not passive learners, but active knowers (Jackson & MacIssac, 1994). Because of this, in order to truly understand -- to truly learn -- we must have some part in putting this framework together. Furthermore, our knowledge is not just out there, it is strongly influenced by our social interactions.

***Authentic Experiences*:** Analogous to the components and their related framework are a myriad of other theories and frameworks. Although different words are used to describe *experience,* authentic learning experiences are suggested as a key ingredient for learning by many scholars:

Dewey (1969) believed a human's ability to learn was embedded in real life or relevant problems the learner was interested in solving. Kolb (1984) proposed that learning begins with a shared, "concrete experience." Chickering and Gamson (1987) recommended that students "do things." Claxton (1990) asserted that experiences can be simulated by recalling previous experiences and placing them in case studies or other simulated experiences.

Freire (1976) referred to the importance of expressing "experiential realities" through the telling of current struggles. Mezirow (1981) asked people to make meaning of their own personal experiences. He felt this would facilitate individuals' "perspective transformation." Jarvis (1987) points out that learning and experience are not synonymous. One can have an experience without learning. Jarvis (1992) also reports on three different types of practical knowledge, "knowing how" (having knowledge about practice), "knowing that" (having knowledge of what happens when certain actions are taken) and "tacit knowledge" (knowledge that becomes internalized and is therefore difficult to articulate). Belenkey, Clinchy, Goldberger and Tarule

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(1986) suggest that for women (and some men) there is a preferred way of knowing coined, "connected knowing." Connected knowing results from lived experiences or vicariously living through others' experiences. In contrast to connected knowing is "procedural knowing," knowledge produced separately from personal experience or feelings. Claxton found that Kolb's concrete experience and Belenkey et al.'s connected knowing were alike, while Kolb's abstract conceptualization was synonymous with procedural/separate knowing.

Schon (1983) proposes the importance of "framing" the context of a problem in the setting of an actual world of practice. He defines framing as the process by which we name the things to which we attend. Lewin (1948) designed the "action research" model. The process of action research begins when employees gather data on problems within the organization. Revans (1983) coined the term "action learning," which also entailed employees tackling real and urgent problems in the workplace that could not necessarily be solved by an expert solution. Argyris and Schon (1974) ask learners to record their language as a point of departure for learning. Marsick and Watkins (1990) have studied informal and incidental learning. Both of these types of learning take place in the course of working life. The entire process of learning can resemble an experience where learning may or may not occur.

Reflection on Experience: A second key ingredient often located within experiential learning theories includes reflection on the authentic experience:

Dewey (1969) proposed that after a problem arises, the mind struggles for a clearer conceptualization of the problem. Learners begin to look for possible solutions, and draw on previous knowledge. Kolb (1984) proposed that after a concrete experience one must reflect for learning to occur. This theorist also believes that one cannot have a concrete experience and simultaneously reflect. Kolb says that one must choose which learning mode he or she brings to bear within different situations. Chickering and Gamson (1987) say that students need to "think about" what they just finished doing.

Freire (1976) was concerned with raising the "critical consciousness" of groups. He asserted that answers to individuals' problems can be found within themselves. For Horton (cited in Moyers, 1983) education is not about teaching a thing. It is a process; more specifically, a thought process. Emotions and dialogue within the thought process are important to create critical consciousness. The thought process helps the oppressed name the realities of their world. Mezirow (1981) asks learners to bring schemata into consciousness and actively critique them. "Critical reflection" occurs when people contemplate previous experiences and ask themselves what worked or did not work in the past, so they can consciously name the source of the error. In contrast, simple reflection entails trial and error problem solving with little thought. There are methods to assist learners in becoming critically reflective. Two include journal writing and storytelling (Brookfield, 1987; Schon, 1991).

Jarvis (1987) states that learning occurs only if there is conscious reflection on situations. "The catalyst for learning is when disjuncture occurs between expectations and achievements" (p. 93). But if practitioners do not take the time, or they reject the opportunity, then "non learning" occurs. If this process is used often, performance will be diminished. Argyris (1982) states that reflective learning is called "double loop" learning. This is the type of learning that recognizes the incompatibility between a person's belief and one's action. In contrast, "single loop learning" is learning within the confines of our "theory in use," which entails not observing the underlying reasons why we act inconsistently with our beliefs. Belenkey et al. (1980) recommends the importance of validating learners' feelings, opinions and experiences as they are "given voice."

Schon (1983) proposes that "reflection in action" is possible, as practitioners think about and change what they are doing while they are doing it. The process of reflection begins with "reframing," which entails transforming perceptions into new understandings. Another step in the process entails "integrating perspectives," a process of "synthesizing divergent views." Furthermore, Schon affirms that sometimes practitioners do not reflect, they simply carry out actions without really thinking about them. This he calls, "knowing in action." Lewin (1948) conceived that as employees actively studied data derived from the organization, this would "unfreeze" understanding so that employees might better analyze and diagnose the problems of the organization. Likewise, with Revans' (1983) action learning, a facilitator is involved to help teams reflect on their own actions. Argyris, Putman and Smith's (1985) action science technology focuses entirely on reflection by uncovering the hidden reasons we behave differently – "our theory in use" – than we desire to – "our espoused theory." Marsick and Watkins (1990) assert that informal and incidental learning take place with less conscious reflection. However,

informal learning involves more of a conscious effort than incidental learning. In order to learn informally or incidentally, employees must actively focus their attention to the messages associated with their actions. Boyd and Fales (1983) conclude that reflection is the most critical factor to ensure learning occurs.

The Social Nature of Learning: A third key ingredient, often advocated to facilitate learning within the context of experiential learning theories, concerns the importance of social interaction as a part of learning:

Kolb (1984) contends that interaction enhances learning. He wrote that: "Intelligence is not an innate internal characteristic of the individual, but arises as a product of the interaction between the person and his or her environment" (p. 12). Freire (1976) promotes learning through affiliation with others who have experienced similar struggles. Jarvis (1987) states that the social situation in which the learning experience is provided may determine the extent to which previous learning is provided or used. Belenkey et al. (1986) recommend, "collaborating in connected-knowing" groups. In Caffarella and Barnett's (1994) view, Belenkey et al. has been the most determined voice for including the affiliation needs of learners as an important component of learning.

Schon (1983) and Marsick and Watkins (1990) discuss the importance of "crossing boundaries." This occurs when two or more individuals or groups communicate about how to complete the tasks of work. Additionally, Schon supports the role of coach who engages in mutual reflection with his or her learners. Marsick and Watkins argued that professionals are more likely to learn informally and incidentally from peers. All action technologies [action research, action learning and action science] declare the importance of learning in groups (Argyris & Schon, 1974; Lewin, 1948; Revans, 1983) .

Balance of Control Between Designer and Learner: The last component advocates learning is facilitated when there is balance of control between the designer who creates a framework for learning and, the learner who selects the appropriate topic and resources deemed necessary for learning. Other theorists have also written about frameworks that provide some balance of control in learning:

Kolb (1984) cited that learning within the formal classroom should be designed and facilitated by an educator to depict a four-part process: 1) concrete experience; 2) reflection; 3) abstract conceptualization (making generalizations from the experience); and 4) active experimentation (trying the learning out in a new situation). Barnett (1989) has since extended Kolb's model to include a fifth stage, that of planning for implementation in the future. He inserts this stage between abstract conceptualization and active experimentation.

Freire (1976) and Horton (cited in Moyers, 1983) affirm that is it important that learning begin where people are presently at (struggles within their culture). Frameworks used at Highlander Folk school include: 1) sitting in a circle where each person tells stories about his/her struggles/experiences. 2) Next, a facilitator helps code the experiences into themes. It then becomes the job of the staff to build "channels" or "banks" through which dialogue can move. 3) The skills of problem solving are taught nonacademically when learners view the process of learning from each other's dialogue about possible solutions. 4) Occasionally, the facilitators will also tell stories. This technique serves to encourage thought and let learners know that the facilitator understands their struggles (cited in Clark, 1978).

Schon's (1983) process of learning is synonymous with Watkins and Marsick's (1990) process of group learning: 1) framing, 2) reframing, 3) integrating perspectives, 4) experimenting, and 5) crossing boundaries. Marsick and Watkins (1990) say that informal and incidental learning lack design by an outside source; however, each individual learner places his or her own design on the learning process. Lewin (1948) states the learning process has two main components: 1) unfreezing and 2) refreezing following the implementation of an action plan. Revans' (1983) process begins with an employee bringing a business problem that has been confronted in his or her work. A group of employees then work with the problem and "test the definition" that the employee has presented. Participants propose alternative ways to view the problem and present possible solutions. When the group decides on a possible solution, the employee determines an action plan for the problem. S/he is then held accountable for producing the results (cited in Froiland, 1994). Argyris and Schon (1974) use a very specific technology to help learners uncover their actions and compare them to their theories. This technology is called, "exposing the left-hand column" which entails articulating what is said in the left hand column and deciphering what the words mean in the right-hand column. Most critical to all action

techniques [action research, action learning and action science] is the involvement of a group-process consultant which helps the teams to reflect on the process of learning.

Watkins and Marsick (1992) forwarded a theory of how employees learn informally and incidentally. Informal learning begins with a non-routine situation in which the individual perceives a need to know more in order to adequately perform. This is followed by a period of reflection; then a search for new information; and finally experimentation with the new information. Strategies for informal learning include self-directed learning, networking, coaching, performance evaluations and trial and error learning. Incidental learning is stated as a by-product of some other activity (one example would be learning through mistakes).

Related Empirical Studies: In the following paragraphs are three related empirical studies that provide some additional insight into the components and framework I have suggested:

In a study by Jarvis (1987), educators were invited to change Kolb's (1984) experiential learning cycle based on their own experiences with learning. Possible problems suggested by the model were that perhaps the stages in Kolb's cycle are not sequential. Additionally, Kolb's model lends itself to talking about a very specific form of experience (a shared-concrete experience) but does not refer to other types of experience. Finally, Jarvis contends that Kolb's model may be a bit simplistic.

The outcome of study confirmed there are nine different routes from which an experience might or might not result in learning. These include type 1: "presumption" which describes learning through socialization; type 2: "non-consideration," which entails not responding to a potential learning experience; type 3: "rejection" which refers to misunderstanding embedded in the situations in which people find themselves; type 4: "pre-conscious," which entails having experiences but not thinking about them; type 5: "practice," which refers to practicing skills; type 6: "memorisation," which entails acquiring information; type 7: "contemplation," which refers to thinking about the situation; type 8: "reflective practice," which entails thinking while doing; and type 9: experimental learning" which refers to learning acquired through experimentation. Furthermore, Jarvis asserts that these nine forms of responses to a potential learning situation form a hierarchy. The first three are regarded as non-learning; while the last three are regarded as the highest form of learning.

Lovin (1992) accomplished a study that indicated the potential for informal learning may not only come from experiences in the workplace, but also from the type of work relationships in effect at the time the experiences occur. Spurring this qualitative case study was the importance of understanding the ways in which professionals learn informally. The study was based on the belief that understanding would provide insight into ways of enhancing both formal and informal learning. The informants were fifty-six paramedics who were self-selected for the study. The researcher validated her data by using: 1) critical incidents that participants had faced on the job and had written about; 2) semi-structured interviews, and 3) extended observations of three paramedics.

One outcome of the research was to outline the informal learning process. Lovin described the following stages: 1) acquisition phase: storytelling or "trading war stories" was used to acquire potential learning experiences; 2) formulation phase: this occurred when the paramedic perceived they did not have sufficient knowledge or skills to address the problem; 3) experimentation phase: this often involves taking a risk to experiment with new learning; and, 4) confirmation stage: which can lead to rejection of the learning or learning can become part of the learner's repertoire.

Lovin described that the potential for learning within the short-term partnerships of paramedics was minimal. Trust was more likely to develop between long-term partners which entailed the right to critique each other, to question or disagree. These rights become resources for learning which improves the ability of the partners to function as competent professionals together.

Mackenzie (1990) demonstrated that "learning how" as Jarvis (1992) describes it (knowledge gained through practical doing) is not an easy process for a recent student who has just become a practitioner. Using a qualitative ethnographic design, Mackenzie observed nursing students and noted there were three stages within the learning process while at work. The first stage was labeled "fitting in," which entailed learning from colleagues and other senior practitioners about common practice. The second stage was labeled, "trying and testing," during which time students moved from dependence on others to a more independent mode. The third stage she labeled, "reality of practice," in which the students learn to become practitioners through integration of practical knowledge from the classroom with that which is learned in practice.

Furthermore Mackenzie also describes that some of the rules actually taught were not being followed in practice (cited in Jarvis, 1992).

Value, Significance and Validity of the Proposed Framework

Theoretical literature and related empirical studies have been presented which form the basis for a framework for designing experiential learning into organizational work life. In the last section of this paper, I will address the value, significance and validity of the components that facilitate learning and the related framework in the context of others' theories and studies:

First, I purpose the components and related framework have value because they allow for more than experience as defined by Kolb's (1984) narrow conception. Kolb says that learning begins with a shared-concrete experience. This model may not be appropriate for employees whose experiences resemble a unique, rather than a shared experience. Jarvis (1987) contends there is more than one type of experience that can lead to learning. Constructivists would claim our perceptions are always influenced by previous knowledge and experience (Jackson & MacIsaac, 1994). Courtney (no date) asks an important question, "If our perceptions are theory-laden, why not our experiences also" (p. 16)?

Additionally, a second path to learning with experience *not* mentioned by Jarvis (1987) may be experience through vicarious learning. Vicarious learning occurs when we read qualitative studies, pour ourselves into stories from literature or see a movie of the intense kind, that makes us laugh, shudder, cry or cringe inside. Likewise, learning occurs from listening to others stories. In the workplace this would include employees listening to colleagues tell of their experiences. Lovin (1992) described the learning process in her study that begins with the telling of "war stories." She states that, "Personal involvement is not necessary for an experience to be acquired and the potential to exist for significant learning to occur" (p. 63). Also, Stake and Trumbull (1982) argue we learn in two ways. One way is to receive generalizations from others and a second way is to form generalizations from real or vicarious experiences.

Furthermore, it is important to consider that within the boundaries the of framework I am purposing, it is possible that those who do not intend to learn (the colleague) might also gain learning incidentally as a by-product of his or her colleague's situation or problem. This would be in line with Marsick and Watkins' (1990) description of incidental learning. The components and their related framework take into consideration each individual's experience and creates a possibility for learning to occur from the other.

Second, the components and related framework account for the importance of reflection in learning--a point that has been extensively expressed by other adult education scholars (see, for example, Arygris, 1982; Dewey, 1969; Brookfield, 1987; Jarvis, 1987; Kolb, 1984; Mezirow, 1981; or Schon, 1983). Schon would argue that experience and reflection can occur synonymously. He called this reflection in action. Courtney (no date) says that it is the "emotionally charged" nature of the learning that makes experience and learning one in the same. The framework I propose is of value because it may actually promote more of the emotionally charged conditions that can create experience and learning in one. Consider the possible emotions as employees become aware of the gap between what they are *not* capable of, and what more they need to learn to perform competently.

Furthermore, the questions found within the framework are a powerful tool to manifest reflection. The questions cause the employee to become more aware of his/her performance deficiencies, needs and goals. The process encountered is possibly synonymous with Schon's (1983) idea of learners acknowledging a non-routine experience. Likewise, Lovin (1992) called this the formation stage of learning in her study. Related to this, Marsick and Watkins (1990) propose employees learning informally sense a perceived need to know when they cannot perform to their own or others' expectations.

Third, the components and related framework are significant because they are unique. The framework I suggest lacks the use of a facilitator which is found in nearly all other related frameworks reviewed in this paper (see, for example, Arygris & Schon, 1974; Lewin, 1948; or Revans, 1983). Often the facilitator is either a process consultant or an intimidating subject-matter expert who helps the learner make sense of, or reflect on, his or her experience. Within the context of this framework, I suggest the facilitator becomes a resource coordinator, someone who searches for and places resources in employees' full view. This is done so employees may select

resources as deemed necessary. The responsibility for learning and problem-solving will ultimately lie with employees.

Although there is no facilitator, others may still enhance the learning as the employee moves through the process. I affirm it is a colleague who is the candidate to enhance learning, due to his or her ability to help put the employee more fully at ease with oneself. Senge (1990) says that we need to be colleagues (whom he refers to as friends) to learn from each other. Likewise, Marsick and Watkins (1990) assert that learning through those we have relationships with at work is an important enhancer to informal and incidental learning. And, Belenkey et al. (1986) propose that affiliation needs are most crucial in learning. Finally, Lovin (1992) went so far as to say the relationships developed in learning may be a more crucial component than the experience itself.

Fourth, those responsible for coordinating learning in non-formal settings are in need of guiding frameworks. Specifically, those in need are managers whom lack a background in learning theory or design who are coaching employees. Or, HRD practitioners, in their evolution from trainers to learning consultants as the concept of "the learning organization" become more prevalent (Senge, 1990; Watkins & Marsick, 1993). Furthermore, this framework might also be applicable for an employee who wishes to take on a self-directed learning project, but prefers learning within the context of social interaction instead of isolation.

Fifth, the components and the related framework are of value to organizations concerned with employees' performance. Formally structured training may teach employee knowledge of practice. Of course, this is entirely different from actually performing competently (Mackenzie, 1990, cited in Jarvis, 1992). If organizations wish to ensure absolute transfer of learning to performance competency, learning must occur where performance is: within the experience of the workplace.

In Conclusion, I would like to address the question: "Are the components and the related frameworks valid?" The components' validity can only be speculated on because they are generalized from reflections on a single experience (Courtney, no date). Furthermore, portions of this framework have been experimented within my teaching practice, but have not been applied completely in an organization. Finally, many prominent scholars have suggested related theories and frameworks "do work," but what of this combination of many theories and frameworks? One cannot propose what the combination will produce. Finally, in addition to introducing components that facilitate learning and its related framework, both must be empirically tested before one can ultimately claim their value and significance. This should be the next step.

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A Case Study of the Development and Implementation of a Structured On-The-Job (SOJT) Training Program In The Coil Processing Industry

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This paper describes the development and implementation of a structured-on-the-job training program for assembly operators at one company in the Midwest. The three research questions focused on (a) what does previous research tell us about the uses, successes, and problems in implementing SOJT, (b) what framework can be adopted to implement SOJT, and (c) what is the outcome of implementing SOJT? Management support and trainer selection were deciding factors in program success.

When training is mentioned, most people think of formal off-the-job or planned in-house classroom learning experiences (Zemke, 1985). Yet most work related instruction occurs in the form of on-the-job training (OJT) during the actual performance of the task (Rothwell & Kazanas, 1990). The American Society for Training and Development (ASTD) estimates that industry spends $90 to $180 billion on employee development through OJT compared to $30 billion for off-the-job training. ASTD also estimates that employees learn 80 to 90 percent of their job tasks with OJT (Carnevale & Gainer, 1989). Even in companies that put a premium on developing employees through off-the-job sources, 60% of all training still occurs on the job (Wehrenberg, 1987).

OJT is generally defined as unplanned workplace learning that involves observation and imitation of experienced co-workers and feedback about job tasks (Rothwell & Kazanas, 1990). It usually entails a supervisor or a more experienced employee teaching a new or less experienced employee the aspects of a task or job. In some instances, the employee may be thrust into the work environment with little or no instruction. They are left to "discover" the technique of their job by themselves or by casually observing more experienced employees. This self discovery, informal observation, and instruction by peers creates many problems and inefficiencies such as inconsistencies in task instruction, peers unwilling to share job information, inaccurate task details, erroneous emphasis on tasks, and unsystematic job sequencing.

In contrast, structured on-the-job training (SOJT) is a planned, systematically developed approach to employee training at the work site (Cullen, Sawzin, Sisson & Swanson, 1976; Jacobs, Jones & Neil, 1992). This structured, systematic approach to OJT reduces the waste, inefficiencies, and inconsistencies inherent in unplanned OJT efforts. SOJT is formally defined as "the planned process of developing task-level expertise by having an experienced employee train a novice employee at or near the actual work setting" (Jacobs & Jones, 1995, p. 22). In general, this planned process involves one on one workplace learning that utilizes training objectives and plans, active guidance by a trained peer or supervisor, job aids and printed materials, and a systems approach (Jacobs, 1992).

SOJT is a not a new concept. Roots and examples of SOJT can be found in craft instruction from the middle ages, apprenticeship programs, craft guilds (Miller, 1987), and in the work of Frederick W. Taylor in the early 1900's (McCord, 1987). World War I saw extensive application of the method to shipbuilding through the work of Charles R. Allen. Allen developed what was know as the "four step" method of instruction (McCord, 1987). An advisory board formed by the National Defense Advisory Commission took Allen's "four step" method and expanded it to seven steps. This seven step system came to be known as Job Instruction Training (JIT) and was used extensively during World War II (McCord, 1987). Today, JIT provides the foundation of many SOJT programs. SOJT can be applied to a wide variety of job types and situations. These include management, staff, administrative, technical, clerical, service, and manufacturing jobs; to situations were large and small numbers

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of employees are to be trained; to prepare new or current employees; to new processes; and is appropriate for simple and as well as complex tasks (Jacobs & Jones, 1995; Jacobs et al., 1992; Sullivan & Miklas, 1985).

Problem Statement

Despite the long standing use of SOJT, surprisingly little published research is available on the topic (Rothwell & Kazanas, 1990) and although much is written about using the method, case studies describing implementations and research studies are few (Cluskey, 1992; DeJong & Versloot, 1994; Jacobs, 1990). Therefore the purpose of this study was to add to the literature by describing the development and implementation of a structured on-the-job training (SOJT) program for assembly operators at one Midwest company in the coil processing industry. The goal of the SOJT program was to train assembly operators to use a torque wrench in the product assembly process. In discussing SOJT systems, both Jacobs and Jones (1995) and Rothwell and Kazanas (1994) stress context analysis. Context analysis examines whether or not SOJT is appropriate for the situation. Prior to implementation, this factor was examined for this application. In selecting SOJT as the intervention for this manufacturing process, the training manager determined that (a) it was the appropriate solution for the training situation, (b) the organization was willing to adhere to changes needed for valid and reliable program implementation, and (c) the supervisors and employees were adequately motivated to undertake and participate in the SOJT program.

Research Questions

Several research questions guided the study. They were:

1. What does previous research tell us about the uses, successes, and problems in implementing SOJT?
2. What framework do others recommend when implementing an SOJT program and how can this be adapted to this manufacturing environment?
3. What would be the outcome of the development and implementation of SOJT in this one environment?

Research questions one and two involved an analysis and synthesis of the literature. Research question two also involved making informed judgements to apply a general framework to a specific application and organizational culture. Research question three represents the results of this case study.

Implementation Environment of the SOJT Program

The company involved, designs and manufactures custom-built coil processing equipment for the ferrous and non-ferrous industries. Its customers include steel, brass, and aluminum mills; metal service centers; and metal product manufacturers for the appliance and automotive industries. Coil slitting lines, tension levelers, shearing and cut-to-length lines were the most prevalent product lines. This plant was a widespread user of informal OJT in nearly every phase of its manufacturing operations and was interested in SOJT for three main reasons. These were (a) quality and reliability requirements, (b) safety concerns, and (c) ISO 9000 documentation requirements. The combination of these three factors made the application of SOJT potentially very significant to this company. The drive to introduce SOJT to the work environment was headed by the training manager who had been on the job for 3 months prior to the beginning of this project and had worked for several years as an industrial engineer and trainer in other organizations.

It was the assembly operations that were chosen for the development of an SOJT program. Assembly was a two shift operation with 43 employees; about one third of the production employees. All operators were white males between the ages of 20 and 60. On average, first shift operators had nine years of experience and second shift had three. In assembly, employees take machined and welded components and assemble the company's products by using threaded industrial fasteners (nuts and bolts). Prior to the implementation of SOJT, the procedure for installing the fasteners was subjective. Operators used a conventional wrench to tighten fasteners and when they believed it was tight enough, the task was complete. There was no objective measure of the torque (tension or clamping force) applied. Therefore, the purpose of the SOJT program was to train assembly operators to use a torque wrench during the product assembly process.

The industrial fasteners are often the weakest point in a product, yet they are the cheapest component (about $2.50 each). Failure of a fastener can damage an entire coil and other parts of the processing equipment. The resulting scrapped coil of steel could be valued as much as $77,000. Damage to other parts of the equipment can cost an additional $10,000, bringing the total lost to $87,000 (M. Starrett, personal communication, October 7, 1994). Despite the high cost of the scrapped product, perhaps the greatest potential loss is the cost of downtime. One customer estimates that an hour of downtime costs $250,000. A more typical example is $45,000 per hour (M. Starrett, personal communication, October 7, 1994).

Fastener failure is also an employee safety issue. Because of the speed at which a coil of steel or aluminum is processed (600 ft/min to 1500 ft/min) and the weight involved (20,000 to 70,000 lbs. per roll), vibration during the production process can put extreme shearing forces on the fasteners. In one example, an improperly installed fastener was shot out of the processing equipment with enough force to penetrate a sheet metal wall (J. Sacksteder, personal communication October 8, 1994).

Another benefit of SOJT to this organization was its potential adaptability to the ISO 9000 quality series. SOJT is first of all structured, making its delivery consistent across a variety of trainers and trainees. It also requires mastery by the trainee, through some type of demonstration/performance checklist. The ISO standard is heavy on documentation requiring organizations to verify their actions according to company standard operating procedures (Stovicek, 1993). The implementation framework of SOJT ensures that training is delivered consistently and learning/mastery has taken place.

Research Question One: Previous Research

Previously published case studies highlighted here describe the application of SOJT to tasks performed by operators in a truck assembly plant (Jacobs et al., 1992), food service workers (Cluskey, 1992), entry level lab technicians (Jacobs & McGiffin, 1987), assistant bank managers (Sullivan & Miklas, 1985), and plastic extrusion operators (Cullen et al., 1976).

Jacobs et al. (1992) This case study was conducted in a large truck assembly plant in the Midwest. Its purpose was to compare the forecasted financial benefits of unstructured and structured on-the-job training. The researchers used the financial forecasting model developed by Swanson and Gradous (1988). Three tasks were chosen for SOJT implementation from a list of 40 based on turnover rate and task difficulty. Across all three tasks, SOJT was five times more efficient than unstructured OJT. From a financial perspective, the benefits forecasted for SOJT were approximately twice those of the unstructured option. Since this study focused on financial benefits, details regarding the implementation process were absent from the publication.

Cluskey (1992) This experimental study involved food service employees of a large hospital. For the operation selected, there were a variety of tasks to be learned, the pace of the operation was hectic, and the turnover rate was high. SOJT appeared to be the practical answer for training these employees. Cluskey's implementation involved four components: (a) a workshop for trainers, (b) printed guides and support materials, (c) implementation, and (d) an SOJT performance support systems. This experimental study included pre and post test examinations of a control and an experimental group. Results of the statistical analysis did not indicate any significant differences between the groups. However during post implementation interviews, Cluskey discovered that trainees in the experimental group did not do the required reading of the training manuals. Therefore her study highlighted the importance of employee motivation and top management follow-up in successful implementation.

Jacobs and McGiffin (1987) Their case study was conducted in a large company that processed and packaged a wide range of edible oils. Large quantities of unrefined oil were received by tank car or truck daily. As the oil was processed, lab technicians took samples and performed tests to ensure product quality. The focus of this study was the entry level lab technicians who performed the quality tests. Jacobs and McGiffin implemented a three part program of (a) supervisory training designed to teach SOJT; (b) extensive job analysis (resulting in a training structure, job aids, and manuals); and (c) performance checklists (for feedback and certification). The results were a level of job mastery by the entry level lab technicians in 3 weeks that formerly took 12 weeks to achieve. The financial benefits of the program were also impressive. The SOJT program cost $4,400 and generated $15,000 gross savings per year.

Sullivan and Miklas (1985) Sullivan and Miklas established a nine month program to train new assistant bank managers using. Their SOJT program involved coordination from 13 different areas of the bank, mentors, mentor training, procedure manuals, performance checklists, and a trainee/supervisor reporting system.

Although no quantitative data was cited in the article, the authors reported that the new assistant managers seemed to have achieved a level of competency in a shorter time than those who became new assistant managers prior to SOJT implementation.

Cullen et al. (1976) The purpose of this study was to compare semiskilled production workers trained using SOJT and informal OJT methods. The operation chosen for the study was plastics extrusion. Training was conducted at the Bowling Green State University (BGSU) Industrial Manufacturing Laboratory and involved 40 subjects; 20 in each group. Plastics extrusion was chosen as the study focus because BGSU possessed a similar extruder to the one operated by Johns-Manville who funded the study. The researchers found that those trained by the structured method achieved competence in significantly less time and had 70% less production losses. In addition, the cost of the structured program was virtually equal to that of the unstructured program.

Summary Some of the key advantages of SOJT include (a) reduced time to job mastery (Cullen et al., 1976; Jacobs et al., 1992; Jacobs & McGiffin, 1987), (b) strengthened supervisor employee relations (Jacobs et al., 1992), (c) consistent presentation of job and task information to each employee (Jacobs et al., 1992), (d) developmental opportunities for supervisors or peers who conduct the training (Black, Ezell, & Zenner, 1994), (e) cost savings from decreased production losses and a reduced employee learning curve (Cullen et al., 1976; Jacobs et al., 1992), and (f) opportunities for employee or union involvement in the training process (Black et al., 1994). SOJT is not appropriate in situations where jobs or parts of jobs must be done correct the first time, employees face safety hazards if the job is not correctly completed, daily work distractions cannot be minimized, and peers or supervisors do not possess the motivation, skills, time, or resources to conduct the training (Rothwell & Kazanas, 1990). As with any intervention, barriers to success include a lack of planning, insufficient analysis, careless selection of trainers, lack of rewards and recognition for those implementing the program, inappropriate applications, and scanty organizational commitment (Black et al., 1994; Jacobs & Jones, 1995).

Research Question Two: Recommended and Applied SOJT Methodology for This Environment

The second research question focused on the framework recommended by others when implementing an SOJT program and how this could be adapted to this manufacturing environment. As noted earlier, this question involved an analysis and synthesis of the literature, as well as making informed judgements about applying a general framework to this specific organization, its management structure, culture, and systems. Our implementation framework was adapted from the work of Jacobs and Jones (1995), Rothwell and Kazanas (1994), and Yang (1995) and conceptualized as a systems approach (Goldstein, 1993; Tracey 1992). The components of the system were:

1. Needs Analysis. According to Jacobs and Jones (1995), Rothwell and Kazanas (1994), and Yang (1995) this component involves management, training professionals, and line experts working together to produce a needs and task analysis and a comprehensive implementation plan. In our application, plans called for the formation of an SOJT design committee to include a subject matter expert in torque application, the operations manager, operator group leaders for each shift (union), line supervisors from each shift, and the training manager. The role of the committee was to advise on all phases of the project. Committee roles were to be defined for each member and distributed by the operations manager. Formal meetings were to be called as necessary. Needs analysis, task analysis, and workforce knowledge assessment were to be completed by the training manager with review and input by the design committee. Standard operating procedures were also to be documented and clarified through the design committee.

2. SOJT Program Design and Development. Products of this stage should include performance objectives, learning materials, pilot testing/revision of learning materials, delivery and evaluation plans as well as evaluation tools. Success of this stage depends on collaborative interaction and support among training professionals and line management (Jacobs & Jones, 1995; Rothwell & Kazanas, 1994; Yang, 1995). In our situation, the training manager was to work in conjunction with the design committee to establish performance objectives for the torque training and a content outline. An initial performance checklist was to be generated by the training manager and the supervisors. The training manager was to work in collaboration with the design committee to develop printed guides, performance checklists, and a reaction survey for the employee training. A pilot test of the materials was planned.

3. Train-the Trainer Implementation. Management, training professionals, and line experts all contribute to this stage. Critical products here include criteria for selecting trainers, conducting the train-the-trainer program, selecting trainees, and finalizing the SOJT training plan (Jacobs & Jones, 1995; Rothwell & Kazanas, 1994; Yang,

1995). Trainer selection criteria based on the work by Cluskey (1992) was to be summarized and circulated to the design committee. The training manager was to modify a train-the-trainer program by Rothwell (1990). The training manager was to develop a reaction survey for the train-the-trainer program. Plans for implementing SOJT with the employees were to be finalized.

4. SOJT Program Delivery. Again management, training professions, and line experts are important collaborators. The primary product at this point is the employee training and monitoring of the SOJT process (Jacobs & Jones, 1995; Rothwell & Kazanas, 1994; Yang, 1995). Our plans called for supervisors to train employees over a three week period. The primary focus now was to be the employee training and monitoring of the SOJT process. The operations manager volunteered to hold meetings with each work group to introduce SOJT to the assembly employees.

5. Evaluation. Training professionals and line experts are the primary contributors during this stage. Determining the value or worth of the program is the main focus and involves an examination of employee performance (immediate and long term), trainer performance, training materials, and the training process (Jacobs & Jones, 1995; Rothwell & Kazanas, 1994; Yang, 1995). For this study, supervisors would complete the performance checklists at the end of the training period and discuss the results with the design committee. Formal plans were not made for long term performance evaluation until the results of this one implementation could be analyzed.

An important facet of the models by Jacobs and Jones (1995), Rothwell and Kazanas (1994) and Yang (1995) was recognition of the importance of factors related to change management, management involvement, communication, employee motivation, and collaboration with the training professional. The integration of these factors into the SOJT training cycle is fundamental to fostering a true learning organization (Ellinger & Cseh, 1995).

Research Question Three: Implementation Results

There is an old saying something along the line that even the best laid plans go astray. That certainly applies to this study. The results of the implementation were as follows:

1. Needs Analysis. The quality manager and the engineering manager were added to the design committee at the request of the operations manager. Their addition was seen as a positive augmentation to the project. Second shift did not contain any operator group leaders so the second shift supervisor became the representative from that shift. Formal meetings of the committee were not held due to schedule conflicts among the committee members. Instead, most consultations were one on one: the training manager with an individual committee member. With the informal nature of the committee, the operations manager and two first shift supervisors became the primary active committee members. The workforce knowledge assessment phase did not go as planned. After the training manager had conducted a few individual interviews with employees, the operations manager realized that there now existed a listing of tasks and a rough outline of torque procedures. The operations manager then called a formal meeting with the affected employees. At this meeting, the operations manager asked the group leaders to take the rough copy of torque procedures back to their groups and begin to get them involved. From an employee involvement perspective, this was a good decision; but from a workforce knowledge assessment standpoint, the training manager's ability to obtain a true picture of workforce knowledge was now distorted. Therefore, this aspect of the research was discontinued. All other aspects of the analysis phase went as planned.

2. SOJT Program Design and Development. As planned, performance objectives were established for the torque training and a content outline was generated. The training manager worked in collaboration with the design committee to develop printed guides and performance checklists. An SOJT trainee reaction survey was not developed due to the employees' reluctance to use paper and pencil instruments. A pilot test of the materials was not completed due to the straightforward nature of the torque procedure. In its place, the design committee reviewed and approved the materials.

3. Train-the Trainer Implementation. Trainer selection criteria based on the work by Cluskey (1992) was to have been summarized and circulated to the design committee. The criteria were developed, but not used because the operations manager decided to have the three supervisors and five group leaders act as the trainers. The training manager developed a train-the-trainer program based on the work of Rothwell (1990), Cluskey (1992), Lewick-Wallace and Jask (1988), Gold (1981), and Wichman (1989). The final train-the-trainer program was conducted in one session lasting two and one half hours for the eight SOJT trainers (three supervisors and

five group leaders). Initial planning called for a role play activity where the SOJT trainers would have a chance to practice teaching another employee. Time constraints made this activity impossible. A reaction survey for the trainer program was developed and used at the end of the program. Eighty-six percent of the SOJT trainers believed the program met its objectives and 75% felt it was effective. However, commitment and motivation to serve as an SOJT trainer was mixed. Plans for implementing SOJT with the employees were finalized.

4. SOJT Program Delivery. Momentum and enthusiasm for the program at this point was quite good. Because of the positive momentum and the operations manager's hectic schedule, the decision was made to not have the kick off meetings with the employees. This turned out to be a fatal mistake as some SOJT trainers interpreted this as a lack of management support for the program. Original plans called for supervisors and group leaders to train employees over a three week period. Three of the group leaders trained 24 of their 35 employees in this time frame; 43 total operators were to have been trained.

5. Evaluation. This phase was not completed within the original time frame as some SOJT trainers did not complete the employee training.

Conclusions

The application of torque to threaded industrial fasteners was a good task to begin the implementation of an SOJT program at this company. The torque procedures were conceptually straightforward, allowing for thorough SOJT development, while having sufficient organizational significance to warrant the need for improvement. In general, improvements generated by this study came from three areas. These were: (a) the development of SOJT trainers along with a program for further employee development, (b) the development and documentation of operations (torque) procedures, and (c) the implementation of a framework to expand SOJT to other portions of the organization. Recommendations that would have improved the implementation of SOJT in this company come from two areas. These were sustained upper management support and SOJT trainer selection as recommended by Jacobs and Jones (1995) and Rothwell and Kazanas (1994). In analyzing the positive and negative aspects of this case study, we wish to frame our conclusions around three issues. These are (a) implications for practice, (b) implications for theory, and (c) implications for research.

From this study, it appears that the frameworks espoused by Jacobs and Jones (1995) and Rothwell and Kazanas (1994) provide a solid basis for practitioners who wish to implement SOJT systems into their organizations. The synergy created by combining the ideas and guidelines from the two works provides a powerful tool for new and seasoned practitioners. The bulk of the collective ideas from the two works address the technical aspects of implementation; yet do not ignore the interpersonal, and business aspects of an SOJT intervention. Many practitioners, especially novices, may assume that the bulk of the project time needs to be spent on the technical aspects of the program. The results of this case study do not bear this out; for it was the interpersonal and business aspects that proved to be the weak link in the project. Therefore, we would recommend that practitioners expend equal thought and energy on the interpersonal and business aspects of an SOJT implementation.

Every new intervention is a challenge for the organization because its people must embrace and respond positively to change. This company now has the beginnings of a program that can bring about improvements in their technical skills training; but no matter how carefully developed a program may be, if the interpersonal and business aspects are not fully integrated into planning and implementation, then the full benefits of the program will not be realized. SOJT is a change program and in order for change to be implemented effectively it must have management support, especially top level management. In this case, initial management support was strong. However that support was not consistently visible and appeared to wavier as schedules became tight. In addition, the training manager discovered after the program was 70% complete that the implementation of SOJT procedures was a concern to some of the more senior shop supervisory and production personnel. Apparently an attempt was made 10 years ago to implement a similar program that did not meet with good results. Because of these circumstances, a strong momentum could not be maintained.

Another premise to be dealt with is, that because an individual is in a supervisory position, he/she will take well to an instructor/trainer role. In this application, the operations manager decided that supervisors and group leaders were paid more and held authoritative positions, therefore they should be the SOJT trainers. This implementation would have gone smoother if the instructor role was not delegated, but made on the basis of the criteria suggested by Cluskey (1992), Jacobs and Jones (1995), and Rothwell and Kazanas (1994). This was one

of the criticisms voiced at the end of the train-the-trainer program, and one that needs to be firmly addressed in other SOJT program implementations.

This study of a real life organizational problem and others like it can contribute SOJT theory building by providing researchers additional information regarding the factors affecting successful implementations. Researchers can then use this data to begin constructing correlational models for testing. As models are proposed, researchers can systematically test the hypothesized relationships, furthering our understanding of this effectual intervention, and in turn apply our new knowledge to future organizational problems--thus completing the cycle of practice, theory, research, and practice.

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Structured On-the-Job Training: Pre-design Analysis Activities

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In the design models for OJT emphasis is rather exclusively on task analysis and the learner's prerequisite skills. A broader consideration of trainee characteristics and work environment conditions is proposed. In this paper focus is on measurement and implications of trainee characteristics and workplace conditions.

In the current discussion about designing On-the-Job Training (OJT) in the pre-design analysis phase strong emphasis is on analyzing work tasks focusing on the determination of the content for OJT (see for example Jacobs & Jones, 1995). The question is whether this is sufficient to design effective OJT. Recent studies showed various factors that enhance or inhibit learning, training and transfer of training. Based on a review of transfer literature Baldwin & Ford (1988) distinguished three categories of factors that affect the effectiveness of training: work environment characteristics, trainee characteristics and training design.

With regard to the work environment recent publications reported several important factors influencing training effectiveness. Critical factors are the role of colleagues, the role of the supervisor and work load during all phases of the training event. Furthermore, Rothwell (1991) stressed the influence of the organizational climate on the possibilities for the use of OJT. Support of colleagues contributes to the trainee's self-efficacy and coping strategies for solving problems (Latham & Crandall, 1991) and has an positive impact on the employee's performance (Becker & Klimoski, 1989) With regard to the role of the supervisor Becker & Klimoski (1989) reported this was the most powerful source of feedback. Gielen (1995) found supervisory support was indirect linked to performance and had a direct impact on trainee's self-efficacy and job involvement. Finally, in several publications the influence of the work load is mentioned (see for example, Baitsch & Frei, 1980; Onstenk, 1994). High levels of work load are perceived as a barrier for acquiring new skills because of time constrains. With regard to the assessment of employee characteristics Baldwin & Ford (1988) suggested that trainee characteristics were most accountable for training outcomes. Important variables were ability and experience. Rather than concentration exclusively on the trainees' prerequisite skills and knowledge in the current thinking about needs assessments more emphasis is placed on the trainees' (learning) attitudes, interests and perceptions (Richey, 1995). Rothwell & Kazanas (1992) reported various employee characteristics to take into account for training design such as work experience and learning style. With regard to the latter characteristic several attempts have been made to identify learning styles and match them with instructional strategies (Vermunt, 1992). An important aspect of a person's learning style is the ability to learn self-directed. Rothwell stressed the importance of this ability because in the case of OJT a trainer is not always permanent available in the workplace.

Above mentioned characteristics contribute to a design of OJT that meets better the preferences and the abilities of the trainees and the specific circumstances in the workplace resulting in a more powerful training environment. In this paper focus is on analysis of employees characteristics and workplace characteristics. The research question that is addressed in this paper concerns the contribution of the analysis of employees characteristics and the analysis of workplace characteristics to the design of OJT.

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Methodology

Corporate setting. This research project was carried out among the franchise post offices of the Dutch Post Office Organization. The franchise post office is a new phenomenon. The independent entrepreneur enters a contract that settles which products and services of the Post Office Organization will be sold in his franchise post office. In most cases the entrepreneur contracts employees to work as desk clerks in his office. The immediate cause for this research project was the necessity to design a product-oriented training that meets the needs of the desk clerks within these new franchise post offices. The HRD-department suspected that training for desk clerks in these offices was necessary. As a training method OJT combined with CBT was perceived as most suitable. However, no information was available with regard to what specific tasks should be included in the training program. Furthermore, no information was available about desk clerks' background features, their willingness to participate in training programs, their learning style and their appreciation with regard to OJT and CBT. Also was not clear on which conditions employers were willing to invest in training. All these topics were included in the research project. In this paper focus is only on workplace and employee characteristics. The practical aim of the research project was to gather descriptive data that provided input for the design of the training program.

Questionnaires. Data from two surveys are presented here. In survey 1 employee characteristics was an important topic and in survey 2 workplace characteristics was one of the major topics. Survey 2 consisted of two separate versions for employers and employees.

Sample. The whole population of eighty franchise post offices was included in the sample. They were split up at random in two equal groups of forty. Each group of forty offices was questioned with one of the two surveys. The sample for survey 1 consisted of 118 desk clerks. In many offices the employer also performs desk clerk tasks so the questionnaire was completed by employees and employers. Response rate was 64% (75 respondents). Response rates for the workplace characteristics survey were 55% (22 employers) and 60% (47 employees).

Workplace characteristics. Following variables were included. Employer's feedback consisted of a four-item scale only rated by employees. Feedback of colleagues was only rated by employees and contained three items. Perception of solving work problems was a scale of four items. For the measurement of the time available for OJT a scale of four items was constructed. These items focused on the time constrains related to opportunities for OJT in post offices. To measure the willingness to invest in employee training five single items only rated by employers were included. Willingness to be involved in employee training was measured with four two-point scale items that were only rated by employers. With exception of the four latter items, all other items used five-point rating-scales.

Employee characteristics. As much as possible existing scales were used. Gielen's job involvement six-item scale was used (Gielen, 1995). Three learning style variables developed by Vermunt (1992) were included. Acquiring knowledge measured a person's preference toward mental activities focusing on memorising facts and procedures, applying knowledge rated a person's preference to emphasise the application of the training content. Self-directed learning measured the ability to carry out cognitive activities for monitoring the learning process. One learning style variable constructed by Kwakman (1992) was included that measured employee's problem solving attitude (active versus re-active) in work settings. Appreciation of different types of training programs was measured with six items that were used also by Cramer & Thijssen (1994). Appreciation for specific training conditions were rated with five items. In every post office manuals are available that contain the desk clerks' tasks procedures. The appropriateness of these manuals to serve as a book of reference in training programs was measured with a scale of six items. Also a scale of six items was constructed that focused on the actual use of these manuals in the respondent's work setting. All items concerning employee characteristics used five-point rating scales.

Background variables. Several items were adjusted in both questionnaires that focused on educational level, length of contract, hours per week, type of contract (employer or employee).

Results

Reliabilities varied between α.56 (self-guided learning) and α .84 (feedback employer). The rather low reliability of self-guided learning is equal to the reliability Kwakman (1992) reported. Elimination of items to receive acceptable reliabilities was necessary for several scales. For all the scales with regard to workplace characteristics the same division of rating points was used: 1 = very high to 5 = very low.

Feedback. Respondents reported sufficient feedback from their colleagues (M = 2.38, SD = .88) and their employers (M = 2.26, SD = .91) on their performance. Items of both variables were rated only by employees. The oneway analysis of variance showed that months working as a desk clerk was related to the perceived feedback of colleagues (F = 2.60, p.05). Respondents that worked more than two years reported significant less feedback of their colleagues.

Time constrains for OJT. The mean of this variable indicated that time constrains did not really exist (M = 3.01, SD 1.05). However, the variability around the mean showed that among respondents rather different perceptions existed with regard to the possibilities for OJT in the post offices.

Problem solving. Respondents perceived the organizational climate as a rather open climate wherein problems and mistakes are discussed in a positive manner (M = 1.93, SD = .62).

Employers' willingness to invest. The willingness to pay travelling expenses for employees that attend training in a training centre was modest (M = 2.90, SD = .1.45). This is also valid for their willingness to supply for employees that must leave their workplace for an evaluation meeting in a training centre (M = 2.63, SD = 1.46). The absence of an employee for a whole week in case of off-the-job training activities is less appreciated (M = 3.16, SD 1.46). Employers are not willing to pay for hotel accommodations for their employees (M = 3.58, SD 1.31). Because training is perceived as an important instrument to improve quality of the post office services, employers receive a bonus of $ 1560,- of the HRD-department for every employee that attends training. The mean score revealed this bonus is perceived as somewhat insufficient (M = 2.56, SD 1.10). Oneway analysis of variance showed that valuation of the bonus was related with the length of time employers served (F = 3.75, p.04). A longer length of time correlated with lower valuation scores. In general, there was considerable variability around the means of the items that measured employers' willingness. This indicated that among employers various opinions existed with regard to their willingness to invest in employee training.

Involvement in employee training. Four items with yes/no ratings were used to measure the employers' willingness to be actively involved in the training of their employees. For all four items counts that training was defined as OJT delivered by a professional trainer from outside the office. 19 from the 22 employers rated these four items. Here percentages are reported. 63% appreciated a discussion with the trainer and their employees before the training to discuss the training content. 58% wanted to be informed by the trainer about their employees' progress. To play an active role as a trainer was valued by 37% of the employers. Only 21% of the employers wanted to map out an written agreement containing the division of tasks and responsibilities of the trainer, the employee/trainee and the employer.

Below the findings of the survey focusing on employee characteristics are reported. In many cases the employer also perform desk clerk tasks. Therefore the ratings below are based on the mutual scores of employees and employers. For all the scales with regard to employee characteristics the same division of rating points was used: 1 = very high to 5 = very low.

Job involvement. The mean showed respondents are slightly involved in their work (M = 2.60, SD .62). It appeared that employers were more involved than employees (F= 9.39, p.00).

Training preferences. The ratings showed that a training in a training centre was most appreciated (M = 2.16, SD .87) and second best was OJT delivered by a professional trainer.
(M = 2.21, SD 1.09). Both types of training are almost equally valued. Less appreciated was OJT delivered by the employer (M = 2.95, SD =1.10). For the employers the phrasing of this item was different. They were asked to rate the appreciation of OJT with the district post office manager as a trainer. Respondents have hardly no appreciation for self-study with CBT (M = 3.41, SD 1.09) or self-study with written training materials (M = 3.64, SD 1.02). The least appreciation existed for not to attend training programs at all in case of learning needs (M = 3.88, SD 1.02). In general, there was

considerable variability around the means of the training program items. This variability was not explained by demographic variables as educational level or type of contract (employee or employer). With regard to the appreciation for training conditions all were highly appreciated. These training conditions were regular feedback, the use of an advanced organizer at the start of the training, active participation in training activities, learning in individual pace, focus on applicability of the training content. For all the five training conditions items no links with background variables were found.

Learning styles. The mean of the variable application of knowledge showed that respondents were focused on application of rules and concepts in the work situation (M = 1.52, SD .50). Less emphasis was found on activities for acquiring knowledge (M = 2.60, SD .57). The variable self-directed learning that measured the cognitive activities to monitor the own learning process showed respondents were able to do this (M = 2.34, SD .67). This is also the case for the variable self-guided learning that rated the attitude of respondents toward problem solving (M = 2.17, SD .64). The variability around the means of the learning style variables was rather limited. It was not explained by the background variables, with exception of educational level for one of the four learning style variables but no clear interpretable pattern existed.

Use and appreciation of manuals. The mean showed that these manuals are consulted quite often (M = 2.15, SD .71). The appreciation of the manuals was also rather positive (M = 2.43, SD .61). The use of the manuals was linked with the working hours per week. Respondents that worked no more than 20 hours consulted these manuals less (F=2.65, p.04). Most parttime desk clerks work during hours when work load is high. Apparently they had less possibilities (quiet moments in their work) to consult these manuals.

Cluster analysis. Involved in this analysis were the learning style variables and the items that measured appreciation of training programs and appreciation of training conditions. The cluster analysis resulted in two clusters. One cluster consisted of 50 respondents and 20 respondents belonged to the other one. A two-tailed t-test was performed with the clusters as grouping variable for all variables involved in the cluster procedure. Results are summarized in Table 1.

In general, the respondents of cluster 2 had lower ratings of all the four learning style variables but only with regard to self-directed learning there existed a significant difference. Lower scores indicate higher ability/stronger emphasis on performing these aspects of the learning style. Five types of training programs were found with significant differences for the two clusters. Inspection of the means showed respondents in cluster 1 only appreciate the training centre and OJT with a professional trainer, while the respondents of cluster 2 appreciated other types of training too and they much stronger rejected the idea of not to attend training activities in case of learning needs. For three of the five training conditions significant differences were found. A general pattern was that respondents of cluster 2 emphasised stronger the presence of training conditions, with exception of the immediate application of the training content in the own work setting.

Differences between both clusters for the background variables were also examined. For one variable, length of time working as a desk clerk, an significant difference was found. The results of the t-test showed that respondents of cluster 1 worked longer as a desk clerk than the respondents in the other cluster (p. 05). For the variables job involvement, use and appreciation of the manuals no differences between both clusters were found.

Table 1. Cluster means for learning style, training programs and training conditions

Variables	Cluster 1 (n=50)	Cluster 2 (n=20)
Learning style		
Using knowledge	1.59	1.54
Obtaining knowledge	2.68	2.62
Self-directed learning	2.53	1.93**
Self-guided learning	2.19	2.07
Training programs		
Training centre	2.02	2.35
OJT delivered by trainer	2.46	1.80*
OJT delivered by employer/ district manager	3.34	2.10**
Self-study with CBT	3.78	2.35**
Self-study with written training materials	3.84	3.35*
No training	3.68	4.40**
Training conditions		
Regular feedback	1.74	1.30**
Advanced organizer	1.82	1.45**
Active involvement	1.76	1.55
Individual pace	2.24	1.70**
Application training content	2.06	2.20

Two-tailed t-test ** $p < .01$ * $p < .05$

Implications of the study

For employees as well as their employers of the franchise post offices there are no obligations to attend training programs delivered by the HRD-department of the Post Office Organization. Participation is voluntary. Consideration of the desk clerk training needs, their attitudes and interests and workplace features is therefore necessary to design training programs that are highly appreciated and practicable.

The findings of this study suggest that most valued are the training in a training centre and OJT delivered by a trainer. Valuation of both training programs was almost equally. These two types of training programs have in common that instruction is provided by a professional. Especially types of self-study training programs are not appreciated by the majority. The intention of the HRD department to offer desk clerks OJT seems therefore a suitable solution when one takes in mind the expressed preferences.

With regard to the workplace conditions there are no real barriers for the use of OJT. As the findings indicate there exists an organizational learning climate in the offices wherein providing feedback and discussing problems are legitimate. Especially for OJT these workplace conditions are obvious of paramount importance because the training takes place in the actual work setting. Also there exists some willingness of employers to be involved in the OJT of their employees. As research

implies, employers actual involvement in employee training contributes to the employees' efforts to acquire and applicate knowledge and skills in their jobs and is therefore an important factor for positive training and transfer results. A possible barrier for the use of OJT is the time available for training in the work setting. However, the alternative, off-the-job training, encounters more opposition of employers. In general, there is only very modest willingness to accept the financial costs and the absence of employees that are the consequences of off-the-job training.

The idea to combine OJT with CBT delivered as a self-study program is not without problems. Although CBT might be an attractive solution because it offers trainees the possibility to study in their own pace, there exists some resistance against CBT. This is also valid for the ratings with regard of self-study with written training materials. A possible explanation for this resistance is that self-study programs require more of trainees' perseverance. In the case of self-study programs there is no trainer that takes over some control of the learning process. Apparently, respondents appreciate 'trainee control' (learner control) less than 'trainer control'.

When one ranks all the preferences that were included in the survey, the structured types of training that possess the highest degree of 'trainer control' (training centre, OJT delivered by a trainer) were most preferred.

To some extend the respondents' emphasis on 'trainer control' is not in line with their learning style. The findings indicate respondents possess a certain ability to monitor their own learning process (self-directed learning), to solve work problems independently and to carry out activities focusing on acquiring and applying knowledge. These latter findings suggest respondents possess a learning style that enables to attend to self-study programs. As Grow (1991) stated, becoming a self-directed learner requires learning experiences wherein trainees experience they are able to take over the control for their own training. A careful introduction of CBT and additional trainer support in the first stages of the CBT might reduce the initial resistance against CBT.

The cluster analysis revealed that the time a respondent works as a desk clerk is linked with the preferences, the learning style and the appreciation of training conditions. In general, there is pattern that a longer career as a desk clerk results into a stronger preference for types of training programs with higher 'trainer control'. A possible explanation is that desk clerks with a longer career had less recent experience with training and have less confidence in their own learning capacities. Furthermore, it is possible that desk clerks with a longer career have lost some interest and are only willing to participate if the training program meets very specific conditions. This implies a very careful introduction of training programs that make an appeal to learner control.

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A Case Study of Informal Learning in the Workplace

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The purpose of this study was to explore and describe the nature of informal learning in the workplace. The work behaviors of four front-line employees were observed by a participant observer during which time any events in which employees acquired new information were recorded. Structured interviews were conducted after the observations to probe typical, infrequent, and unusual learning experiences to gain a deeper understanding of these processes. Preliminary results of this study are discussed in this paper.

Many organizations invest sizable sums of money in formal training and development programs. The intent of these programs is to transfer specific information about employees' jobs and to transfer general understandings about the organization. It is believed that greater expertise in both of these areas contributes to successful employee performance. Historically, it has been assumed that employees acquired these two types of information through formal training and development experiences.

However, recent studies have found that employees learn as much, if not more, from informal learning experiences in the workplace as they do from formal training and development experiences (Rothwell & Kazanas, 1990). For example, Brinkerhoff and Gill (1994) report that as much as 90 percent of the new knowledge, skills, and beliefs that employees need to effectively do their jobs is acquired in the work setting rather than in formal training and development programs.

Informal workplace learning is characterized by unstructured, and often unplanned, experiences in which employees acquire job information and organizational information. Job information, as distinguished from organizational information, refers to the knowledge and skills that are necessary for performing specific job duties and tasks. In contrast, organizational information refers to general understandings about the norms, values, beliefs, and assumptions that define an organization and guide employee behavior. Examples of informal learning include events in which employees acquire new information by observing others do their work, by attempting to do new job tasks, or by asking co-workers about the norms of their work groups.

Although informal learning appears to be one of the most common ways of acquiring information, few empirical studies have investigated the nature of this phenomenon. In particular, little is presently known about how or why employees select certain sources of information and methods of learning to acquire different types of information.

It is not contentious that employees at all levels of an organization, from managers to front-line employees, acquire information through informal learning. However, it appears that front-line employees engage in informal learning experiences more frequently than other employee groups (Drucker, 1988; Nonaka, 1991). Front-line employees are non-supervisory personnel who are responsible for performing the work of an organization. Due to recent changes in organizations and in business environments, the work of this group of employees is more knowledge-based, problem-oriented, and ambiguous than ever before. As a result, front-line employees must continually learn new knowledge and skills to effectively perform their jobs. One of the primary ways that they acquire new information is through informal learning.

Therefore, if organizations typically provide formal experiences for ensuring the effective performance and professional development of their employees, and if front-line employees actually use formal and informal experiences to acquire information about their jobs and organizations, then more must be known about the nature of the informal learning experiences that front-line employees use to learn new information.

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Purpose

The purpose of this study was to explore and describe the informal learning experiences of front-line employees. Specifically, the research questions that guided this investigation were:

(a) What types of information do front-line employees acquire during informal learning experiences?
(b) What sources of information do front-line employees use during informal learning experiences?
(c) What methods of learning do front-line employees use during informal learning experiences?
(d) What relationships exist among the types of information, the sources of information, and the methods of learning that front-line employees use during informal learning experiences?
(e) Do certain contextual factors influence informal learning experiences?
(f) Do certain personalogical factors influence informal learning experiences?

Learning the answers to these questions will provide an empirical base for developing workplace-based learning interventions that may be less costly, more effective, and more responsive than those presently used in formal training and development programs. Organizations could use this knowledge to modify their present training and development systems so that they are more consistent with the ways that people naturally learn in the workplace.

Methodology

The research design and sample, data collection activities, and data analysis techniques that were used in this study are described in the following section.

Research Design and Sample. This study used a case study approach to explore and describe the informal learning experiences of front-line employees in the workplace. An automotive insurance services organization located in Cedar Rapids, Iowa served as the site for this investigation. This company employs approximately 150 people, 85 per cent of whom are front-line employees.

Four front-line employees in this organization served as the participants in the study. These employees were selected by the management of the participating organization in conjunction with the researcher. Employees were selected in pairs. Each pair consisted of an inexperienced worker with less than one year of relevant work experience and an experienced worker with more than five years of relevant work experience. Both employees in each pair worked in the same department. One pair of employees worked in the Vehicle Services Agreement department and the other pair worked in the Document Control department.

Data Collection. A combination of direct observations and personal interviews were used to gather the data. A participant observer observed each of the employees as they did their jobs. Using data collection sheets and journals, the participant observer recorded and described any experiences in which front-line employees acquired new knowledge or skill. The descriptions included the types of information that employees acquired, the sources of information that they accessed, the learning methods that they used, and the worth of their learning experiences as perceived by the employees. In addition to documenting specific learning experiences, the participant observer recorded any other observed events and interactions among employees that she perceived as relevant to understanding the behaviors of the employees in the investigation. Each of the four employees was observed for four consecutive eight-hour work days. Thus, a combined total of 128 hours of work behavior for the four employees was observed.

In addition to observing employee work behavior, face-to-face structured interviews were conducted after each employee's four-day observation period. Interview schedules were constructed following the observations with the purpose of probing typical, infrequent, and unusual learning experiences to gain a deeper understanding of these processes. The interviews were conducted by the same person who observed each employee's work behavior and lasted an average of 45 minutes.

Data Analysis. Content analysis was used to analyze the data (Patton, 1990). This qualitative methodology involves identifying patterns, themes, and categories across participants

that emerge from inductively analyzing the data. Data analysis involved five main steps: (1) transcribe the information from the observations and interviews; (2) code the transcriptions by assigning categories to parts of the data; (3) analyze the coded data for consistent patterns, themes, and categories; (4) construct a typology to systematically organize the categories; and (5) determine the credibility of the findings by source and analyst triangulation.

Results and Conclusions

While analysis of the data was underway at the time this paper was submitted for the conference proceedings, preliminary findings show interesting similarities and differences between inexperienced and experienced employees in regard to the nature of their informal learning experiences. One similarity is that both employee groups acquired a variety of job and organizational information during informal learning experiences. Examples of job information included automobile dealer telephone numbers, insurance claim numbers, and customer mailing addresses. Examples of information that employees learned about the organization included recognition that quantity rather than quality is the dimension of performance most valued by the organization and that competition among members of work groups is a primary means by which the organization attempts to motivate its employees and increase productivity. Another similarity between inexperienced and experienced employees was that they used similar sources of information and learning methods to acquire certain types of technical information. For example, both employees in the Vehicle Services Agreement department used information manuals to look up automobile parts numbers, although it is interesting to note that the experienced employee customized the department's manual for his own use so that he could locate information more efficiently.

However, the findings also indicate that the nature of informal learning experiences for experienced and inexperienced employees is different in three important ways. First, the two groups of employees acquired different amounts of job information, with inexperienced employees acquiring more of this kind of information than experienced employees. Second, the specific nature of the information acquired was different, with inexperienced employees acquiring more facts and procedural information than experienced employees. And third, inexperienced and experienced employees tended to access different information sources and use different learning methods when acquiring organizational information.

A final paper containing a comprehensive report of this study's results, conclusions, and implications for professional practice and future research in HRD will be presented at the annual conference of the Academy of HRD in February/March, 1996.

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